

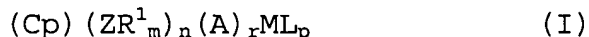


ATTACHMENT A

Claims 1 - 27: (Cancelled)

28. (Currently amended) A catalyst system for polymerizing olefins comprising a product obtained by contacting:

(A) a metallocene complex of formula (I):



wherein $(\text{ZR}^1_{\text{m}})_n$ is a divalent group bridging Cp and A;

Z is selected from C, Si, Ge, N and or P;

R^1 being equal or different from each other, is selected from hydrogen or a linear or branched, saturated or unsaturated $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_7\text{-C}_{20}$ alkylaryl, and $\text{C}_7\text{-C}_{20}$ arylalkyl and combinations thereof;

Cp is a substituted or unsubstituted cyclopentadienyl group, optionally condensed to one or more substituted or unsubstituted, saturated, unsaturated or aromatic rings, containing from 4 to 6 carbon atoms, optionally containing one or more heteroatoms;

A is selected from $-\text{O}-$, $-\text{S}-$, and or $-\text{N}(\text{R}^2)-$, wherein R^2 is selected from hydrogen, a linear or branched, saturated or unsaturated $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_7\text{-C}_{20}$ alkylaryl and or $\text{C}_7\text{-C}_{20}$ arylalkyl, or A is Cp;

M is selected from a transition metal belonging to group 3, 4, 5, and or 6, or a lanthanide or actinide metal of the Periodic Table;

L being equal or different from each other, is a monoanionic sigma ligand selected from the group consisting of hydrogen, halogen, $-\text{R}^3$, $-\text{OR}^3$, $-\text{OCOR}^3$, $-\text{SR}^3$, $-\text{NR}^3_{2,1}$ and $-\text{PR}^3_2$ and combinations thereof, wherein R^3 is selected from a linear or branched, saturated or unsaturated $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_7\text{-C}_{20}$ alkylaryl, and $\text{C}_7\text{-C}_{20}$

arylalkyl and combinations thereof, wherein R^3 optionally contains one or more Si or Ge atoms;

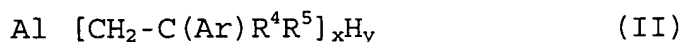
m is 1 or 2;

n is an integer ranging from 0 to 4;

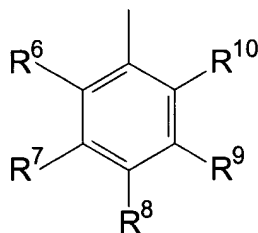
r is 0 or 1, with the proviso that n is 0 when r is 0;

p is an integer equal to an oxidation state of M minus 2 when $r=1$, and minus 1 when $r=0$, and ranges from 1 to 4;

(B) an organometallic aluminium aluminum compound of formula (II):



wherein Ar is a substituted aryl group corresponding to formula (III):



(III)

wherein R^6 , R^8 and R^{10} are selected from the group consisting of hydrogen, halogen, $[-R^3]$, $-C(O)R^3$, $-OR^3$, $-SR^3$, $-NR^3_2$ and $-NO_2$;

R^7 and R^9 are selected from the group consisting of hydrogen, halogen, ~~linear or branched, saturated or unsaturated C_1-C_{20} alkyl, C_3-C_{20} cycloalkyl,~~ C_6-C_{20} aryl, C_7-C_{20} alkylaryl and C_7-C_{20} arylalkyl, wherein R^7 and R^9 optionally contain one or more Si or Ge atoms; two adjacent substituents R^6-R^{10} optionally form a ring, having 3 to 8 carbon atoms; with the proviso that Ar is not an unsubstituted phenyl ~~R^6 , R^7 , R^8 , R^9 and R^{10} cannot be hydrogen, and Ar cannot be an alkylaryl;~~

R^4 is selected from a linear or branched, saturated or

unsaturated, C₁-C₁₀ alkyl, C₆-C₂₀ aryl, C₇-C₂₀ arylalkyl ~~and~~ or C₇-C₂₀ alkylaryl;

R⁵ is selected from hydrogen or a linear or branched, saturated or unsaturated, C₁-C₁₀ alkyl, C₆-C₂₀ aryl, C₇-C₂₀ arylalkyl ~~and~~ or C₇-C₂₀ alkylaryl; R⁴ and R⁵ optionally form a ring, having 3 to 8 carbon atoms; a carbon atom in the compound of formula (II) being optionally replaced by a Si or a Ge atom;

x is 2 or 3;

y = 3 minus x; and

(C) water;

wherein a molar ratio between the organometallic aluminium compound (B) and the water (C) is between 1:1 and 100:1.

29. (Previously presented) The catalyst system according to claim 28, wherein the molar ratio is about 2:1.

30. (Previously presented) The catalyst system according to claim 28, wherein a molar ratio between the organometallic aluminium compound (B) and the metallocene complex (A) ranges from 50:1 to 50,000:1.

31. (Previously presented) The catalyst system according to claim 28, wherein M is selected from Ti, Zr or Hf.

32. (Currently amended) The catalyst system according to claim 28, wherein the divalent group (ZR¹_m)_n is selected from the group consisting of CR¹₂, (CR¹₂)₂, (CR¹₂)₃, SiR¹₂, GeR¹₂, NR¹ and PR¹, R¹ has the same meaning as in claim 28 [[19]].

33. (Previously presented) The catalyst system according to claim 32, wherein the divalent group (ZR¹_m)_n is selected from

the group consisting of $\text{Si}(\text{CH}_3)_2$, SiPh_2 , CH_2 , $(\text{CH}_2)_2$, $(\text{CH}_2)_3$ and $\text{C}(\text{CH}_3)_2$.

34. (Previously presented) The catalyst system according to claim 28, wherein Cp is selected from the group consisting of cyclopentadienyl; mono-, di-, tri- and tetra-methyl cyclopentadienyl; 4-^tbutyl-cyclopentadienyl; 4-adamantyl-cyclopentadienyl; indenyl; mono-, di-, tri- and tetra-methyl indenyl; 3-^tbutyl-indenyl; 3-trimethylsilyl-indenyl; 4,5,6,7-tetrahydroindenyl; fluorenyl; 5,10-dihydroindeno[1,2-b]indol-10-yl; N-methyl- or N-phenyl-5,10-dihydroindeno [1,2-b]indol-10-yl; 5,6-dihydroindeno[2,1-b]indol-6-yl; N-methyl- or N-phenyl-5,6-dihydroindeno[2,1-b]indol-6-yl; azapentalene-4-yl; thiapentalene-4-yl; azapentalene-6-yl; thiapentalene-6-yl; and mono-, di- and tri-methyl-azapentalene-4-yl.

35. (Previously presented) The catalyst system according to claim 28, wherein L is selected from the group consisting of -Cl, -Br, -Me, -Et, -n-Bu, -sec-Bu, -Ph, -Bz, - CH_2SiMe_3 , -OEt, -OPr, -OBu, -OBz and -NMe₂.

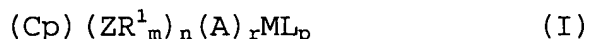
36. (Previously presented) The catalyst system according to claim 28, wherein Ar is selected from the group consisting of 4-fluoro-phenyl, 4-chloro-phenyl, 4-methoxyphenyl, 4-nitrophenyl, 2,4-difluorophenyl, 2,4-dichlorophenyl, 2,6-difluorophenyl, 2,6-dichlorophenyl, 3,5-difluorophenyl, 3,5-dichlorophenyl, 2,4,6-trifluorophenyl, 2,4,6-trichlorophenyl, 3,4,5-trifluorophenyl, 3,4,5-trichlorophenyl, pentafluorophenyl and pentachlorophenyl.

37. (Previously presented) The catalyst system according to claim 28, wherein the organometallic aluminium compound of

formula (II) is selected from the group consisting of tris[2-(4-fluoro-phenyl)-propyl]aluminium, tris[2-(4-chloro-phenyl)-propyl]aluminium, and tris[2-(pentafluorophenyl)-propyl]aluminium.

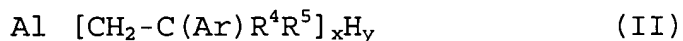
38. (Previously presented) A catalyst system for polymerizing olefins comprising a product obtained by contacting:

(A) a metallocene complex of formula (I):



wherein M, Cp, $(\text{ZR}^1_{\text{m}})_n$, A, L, **r** and **p** have the same meanings as in claim 28; and

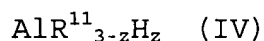
(B') a product of a reaction between water and an organometallic aluminium compound of formula (II):



wherein Ar, R^4 , R^5 , **x** and **y** have the same meanings as in claim 28;

wherein a molar ratio between the organometallic aluminium compound and the water is between 1:1 and 100:1.

39. (Currently amended) The catalyst system according to claim 28, wherein the metallocene complex is pre-alkylated with at least one organometallic aluminium compound of formula (IV):

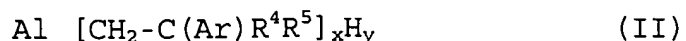


wherein R^{11} is selected from a linear or branched, saturated or unsaturated, $\text{C}_1\text{-C}_{10}$ alkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_7\text{-C}_{20}$ arylalkyl, and $\text{C}_7\text{-C}_{20}$ alkylaryl and combinations thereof; and

z is 0 or 1.

40. (Previously presented) An alumoxane obtained by contacting an organometallic aluminium compound of formula

(II)



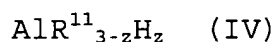
wherein Ar, R⁴, R⁵, x and y have the same meanings as in claim 28, with water, wherein a molar ratio between the organometallic aluminium compound and the water is between 1:1 and 100:1.

41. (Previously presented) The catalyst system for polymerizing olefins according to claim 28, wherein the olefins comprise at least one α -olefin of formula $\text{CH}_2=\text{CHR}$, wherein R is hydrogen or a C₁-C₂₀ alkyl radical.

42. (Previously presented) The catalyst system for polymerizing olefins according to claim 41, wherein said α -olefin is selected from the group consisting of propylene, 1-butene, 4-methyl-1-pentene, 1-hexene and 1-octene.

43. (Previously presented) The catalyst system for polymerizing olefins according to claim 28, wherein ethylene is copolymerized with an α -olefin of formula $\text{CH}_2=\text{CHR}'$, wherein R' is selected from a linear, branched or cyclic C₁-C₂₀ alkyl radical, or with a cycloolefin, and optionally with a polyene.

44. (Currently amended) The catalyst system according to claim 38, wherein the metallocene complex is pre-alkylated with one or more organometallic aluminum compounds of formula (IV):



wherein R¹¹ is selected from a linear or branched, saturated or unsaturated, C₁-C₁₀ alkyl, C₆-C₂₀ aryl, C₇-C₂₀ arylalkyl,

~~and~~ C₇-C₂₀ alkylaryl and combinations thereof; and

z is 0 or 1.

45. (Previously presented) The catalyst system for polymerizing olefins according to claim 38, wherein the olefins comprise at least one α -olefin of formula $\text{CH}_2=\text{CHR}$, wherein R is hydrogen or a C₁-C₂₀ alkyl radical.

46. (Previously presented) The catalyst system for polymerizing olefins according to claim 45, wherein said α -olefin is selected from the group consisting of propylene, 1-butene, 4-methyl-1-pentene, 1-hexene and 1-octene.

47. (Previously presented) The catalyst system for polymerizing olefins according to claim 38, wherein ethylene is copolymerized with an α -olefin of formula $\text{CH}_2=\text{CHR}'$, wherein R' is selected from a linear, branched or cyclic C₁-C₂₀ alkyl radical, or with a cycloolefin, and optionally with a polyene.

48. (Previously presented) The catalyst system for polymerizing olefins according to claim 39, wherein the olefins comprise at least one α -olefin of formula $\text{CH}_2=\text{CHR}$, wherein R is hydrogen or a C₁-C₂₀ alkyl radical.

49. (Previously presented) The catalyst system for polymerizing olefins according to claim 48, wherein said α -olefin is selected from the group consisting of propylene, 1-butene, 4-methyl-1-pentene, 1-hexene and 1-octene.

50. (Previously presented) The catalyst system for

polymerizing olefins according to claim 39, wherein ethylene is copolymerized with an α -olefin of formula $\text{CH}_2=\text{CHR}'$, wherein R' is selected from a linear, branched or cyclic $\text{C}_1\text{-C}_{20}$ alkyl radical, or with a cycloolefin, and optionally with a polyene.